

REMARKS

In the currently pending office action, the Examiner withdrew the indicated allowability of claims 21 – 53 cited in the office action dated 18 March 2004. Instead, the Examiner now issues new grounds of rejection in view of the newly discovered references to Razell (U.S. Patent No. 5,428,543), Dent '291 (U.S. Patent No. 5,673,291), and Dent '537 (U.S. Patent No. 5,867,537).

§102 Rejections

In the current office action, the Examiner rejected claims 54 – 57 under 35 U.S.C. §102(b) as being anticipated by Razzell. Independent claim 54 requires bitwise filtering derived bits generated from the input bits to generate component waveforms and selectively combining the component waveforms to produce the desired signal constellation. As required by claim 54, combining the input bits generates the derived bits.

Contrastingly, Razzell describes a method of transmitting data signals comprising, inter alia, filtering the input data bits and combining the filtered bits to produce a desired signal constellation (see, for example, Figures 5 and 6). The Examiner asserts that column 4, line 8 through column 5, line 20 teaches bit-wise filtering of derived bits. However, nothing in this section or in any other portion of Razzell even suggests combining or otherwise modifying the input bits before filtering. Razzell simply describes a filtering technique that is applied directly to the input bits. Because Razzell only filters the input bits and because Razzell does not teach or suggest any filtering operations on any type of derived bits, Razzell cannot anticipate

independent claim 54, or claims 55 – 57. Applicant respectfully requests reconsideration.

Applicant notes that new claim 79 also includes the limitations of bitwise filtering the derived bits. As such, new claim 79 is allowable over the cited art.

#### §103 Rejections – Independent Claims

The Examiner rejected claims 21, 22, 25, 29 – 33, 41 – 43, and 67 – 78, where claims 21, 41, and 67 are independent, under 35 U.S.C. §103 as unpatentable over Dent '291 in view of Razzell. First, Applicant asserts there is no motivation to combine Razzell with Dent. In order to form a *prima facie* case of obviousness, Razzell, Dent 291, or the knowledge of one skilled in the art must provide some motivation for the combination. Dent '291 describes an inventive system and method of providing a decodulation (a combination of demodulation and decoding), and is therefore related to the receiving end of a wireless system. However, as discussed above, Razzell describes a modulation technique for transmission signals, and is therefore related to the transmitting end of a wireless system. Because Dent '291 describes an element in a receiver, while Razzell describes an element in a transmitter, the references are unrelated and there is no motivation to combine the teachings of the two references.

Second, even if *arguendo* there is motivation to combine Razzell with Dent '291, the resulting combination does not teach the claimed invention. The Examiner asserts that Dent '291 discloses a communication transmitter that implements each of the steps of claim 21, including “forming … at least two derived bits during each symbol period by combining selected information bits,” “forming, during each symbol period, a plurality of

bit sequences, each bit sequence containing bits input or derived over a plurality of symbol periods,” and “generating . . . a plurality of filtered waveform segments using the bit sequences.” To support this assertion, the Examiner points to Figure 2B, column 5, lines 14 – 67, column 8, lines 1 – 67, and column 11, line 7 – column 12, line 4. However, the cited sections simply describe how input bits may be combined in a transmitter to generate parity bits. As is well understood in the art, parity bits are part of error correction schemes and are not related to the generation of real and imaginary parts of modulation waveforms. As such, the parity bit generation in Dent ‘291 is wholly different from the derived bit generation of the claimed invention. Because, as discussed above, Razzell also does not teach generating derived bits by combining input bits, Razzell does not solve the defects of Dent ‘291.

Third, the Examiner asserts that Dent ‘291 teaches every limitation of claim 21 except for combining, during each symbol period, at least two of the filtered waveform segments to obtain a segment of the real or imaginary waveform part. For this teaching, the Examiner relies on the combiners shown in Figures 5 and 6 of Razzell. However, the combiners (elements 44 and 46 in Figure 5 of Razzell) combine the filtered input bits. Contrastingly, the combiner of claim 21 combines filtered waveform segments generated by filtering the derived bits. As such, even if Razzell is combined with Dent ‘291, the resulting combination does not teach each and every limitation of independent claim 21.

For at least the reasons discussed above, neither Razell nor Dent ‘291, alone or in combination, teach or suggest each limitation of independent claim 21. As such,

independent claim 21 and dependent claims 22, 25, and 29 – 33 are patentably distinct from Razzell and Dent '291. Applicant respectfully requests reconsideration.

Further, independent claims 41 and 67 both include a logic unit that combines input bits to produce derived bits, a filter that generates a waveforms from the derived bits, and combiners to combine at least two of the waveforms to obtain the real and imaginary parts of the modulation waveform. Therefore, for substantially the same reasons provided above with respect to claim 21, independent claims 41 and 67, as well as dependent claims 42 – 43 and 68 – 78 are also patentably distinct from Razzell and Dent '291. Applicant respectfully requests reconsideration.

#### §103 Rejections – Dependent Claims

In addition to the above arguments, Applicant notes that the Examiner rejected dependent claims 71 – 76 as obvious in view of Razzell and Dent '291. However, the basis for the rejections, provided on pages 9 – 10 of the pending office action use Dent '537 instead of Dent '291. As such, the rejection is improper. However, because Dent '291 does not teach any kind of resistor network, Applicant assumes that the Examiner meant to reject claims 71 – 76 as obvious in view of Razzell and Dent '537. Even if this is the case, the rejection cannot withstand scrutiny. As discussed further below with respect to claims 35 – 36 and 45 – 48, Dent '537 does not teach the resistive combining network claimed in claims 71 – 76. As such, claims 71 – 76 are patentably distinct from any combination of the cited art.

The Examiner rejected claims 26 – 28, 34 – 36, and 44 – 49 under §103 as unpatentable over Dent '291 in view of Razzell and further in view of Dent '537. First,

Applicant notes that because claims 26 – 28 and 34 – 36 depend either directly or indirectly from allowable claim 21, and because claims 44 - 49 depend either directly or indirectly from allowable claim 41, claims 26 – 28, 34 – 36, and 44 – 49 are patentably distinct from the cited art. Further, while the Examiner proffers motivation for combining Dent '291, Razzell, and Dent '537 in rejecting claim 26, the Examiner does not proffer any motivation for combining the references when rejecting claims 27, 28, 34 – 36, and 44 – 49. As such, the rejections are improper and must be withdrawn.

Further, even if there were sufficient motivation, Applicant submits that at least claims 35 – 36 and 45 – 48 are patentably distinct. The Examiner asserts that Figure 3 and column 4, line 52 through column 6, line 53 of Dent '537 teaches the resistive combining network of these claims. However, while Figure 3 of Dent '537 does show a resistive network, there is nothing in Figure 3 or the cited section that teaches or suggests that the resistive network of Dent '537 is a resistive combining network. Instead, Dent '537 teaches that the resistive networks 60, 80 weight the flip-flop outputs, while summing junctions 70, 90 combine the weighted outputs. Because nothing in Dent '537, Razzell, or Dent '291 teaches or suggests a resistive combining network, claims 35 – 36 and 45 – 48 are patentably distinct from the cited art. Applicant respectfully requests reconsideration.

Lastly, the Examiner rejected claims 58 – 61 and 63 – 66 under §103 as unpatentable over Razzell in view of Dent '537. First, because claims 58 – 61 and 63 – 66 depend either directly or indirectly from allowable claim 54, claims 58 – 61 and 63 – 66 are patentably distinct from the cited art. Further, Applicant notes that the Examiner

does not provide any motivation for combining the references when rejecting claims 59 – 61 and 63 – 66. As such, the rejection is improper and must be withdrawn.

Further still, at least claims 60, 61, and 63 claim the resistive combining network discussed above. Therefore, for substantially the same reasons provided above, claims 60, 61, and 63 are patentably distinct from the cited art.

### Formality Rejections

In addition to the above-discussed rejections, the Examiner also objected to claims 54 and 59 for repetitive phrases and rejected claim 40 under 35 U.S.C. §112, 2<sup>nd</sup> paragraph for lacking antecedent basis. In response, Applicant amended claims 40, 54, and 59, as shown in the attached “Amendments to the Claims,” to address the Examiner’s objection and rejection.

Lastly, the Examiner rejected the drawings. In the Examiner’s opinion, all elements in the drawings should be labeled. To address this rejection, Applicant submits an amended Figure 2. As amended, element 104 in Figure 2 now includes the label “counter.” As such, Applicant respectfully requests reconsideration.

### Summary

In view of the above remarks and the enclosed claim amendments, Applicant asserts that claims 21 – 78 are patentably distinct. Therefore, because the Examiner has already indicated that claims 1 – 20 are allowable, Applicant submits that claims 1 – 78 are allowable. Applicant requests the Examiner reconsider the rejections and allow the pending application to move forward to allowance. Should any issues remain

unresolved, Applicant respectfully requests the Examiner contact the undersigned so that such issues may be resolved expeditiously.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.



Dated:20 January 2005

Jennifer K. Stewart  
Registration No.: 53,639

P.O. Box 5  
Raleigh, NC 27602  
Telephone: (919) 854-1844